DeMaria, Eva

From: DeMaria, Eva
Sent: Wednesday, July 22, 2015 11:19 AM
To: 'SUTTER.Jennifer@deq.state.or.us'
Cc: Matt McClincy (mcclincy.matt@deq.state.or.us); Sheldrake, Sean; Michael Allen (allenmc@cdmsmith.com)
Subject: RE: Evraz Riverbank Import - Chemical testing results
Attachments: Evraz riverbank import review comments 2015.7.22.docx

Jennifer-

I've attached EPA's draft comments on the initial testing of potential import material for the Evraz riverbank restoration project. Please call or email if you have questions. Thanks.

Eva

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From: Linda Baker [mailto:lbaker@integral-corp.com]
Sent: Monday, July 20, 2015 4:47 PM
To: SUTTER Jennifer
Cc: DeMaria, Eva; Sheldrake, Sean; Drew Gilpin (Drew.Gilpin@evrazna.com); Debbie Deetz Silva (Debbie.Deetz.Silva@evrazna.com); Mike Byers (mike.byers@creteconsulting.com); Craig Heimbucher; Jane Sund
Subject: Evraz Riverbank Import - Chemical testing results

Jennifer – below and attached is the information on import material testing to date. I have copied Eva DeMaria and Sean Sheldrake for EPA source control, since EPA asked to see the import data in their comments on the design.

Import material testing is in process for the EVRAZ riverbank source control measure. The supplier (J L Storedahl & Sons) has provided data for three potential import materials as follows:

1. 1.5" minus crushed rock that is to be placed between the geofabric and the rock armor (LIVINGSTON G-121 ODOT 1½')
2. Beach backfill that is to be used as backfill in beach removals (DAYBREAK G-109 BEACH BACK; also BB-S Comp, BB-C Comp, BB-N Comp and BB-Total Comp)
3. Berm backfill that is to be used subgrade in berm removal areas, within soil wraps and located below 1-foot of topsoil (LIVINGSTON G-121 BERM BAC)

The attached files include a summary table of analytical results (excel file), and the analytical reports. The initial samples were grab samples. The beach backfill is from a gravel pit and the sample was from a pile that was excavated from the gravel pit and stockpiled. The excavating and moving around provides some degree of compositing and the arsenic results (with the exception of the anomalous result that could be a laboratory error) support the uniform nature of the material. The 1.5-inch minus is crushed rock from a basalt quarry and is expected to be uniform in concentration (quarry in one type of rock without significant variability in the rock type). While the original samples were not composites, they are considered representative as the original product is a uniform, mixed material.

Here is a summary of the results and current status:

1. <u>1.5” minus crushed rock (to be placed between geofabric and rock armor):</u>
    a. Meets design import criteria except copper and, pending confirmation sampling, DEQ has indicated the copper concentrations is acceptable. The copper concentration was 98.2 mg/kg; the import criteria is the DEQ background value for the Portland Basin, 34 mg/kg.
    b. The 1.5” minus will be considered acceptable pending additional copper testing confirming the initial result (or showing lower concentrations). The supplier is retesting 3 composite samples for copper. We have discussed the 98.2 mg/kg copper result with DEQ and they have indicated that if the98.2 mg/kg result is confirmed by the subsequent testing they will consider the material acceptable. This concentration is:
        i. Below risk-based criteria being considered for Portland Harbor (JSCS= 149 mg/kg, EPA Draft PRG (June 2015): RAO 5- Direct contact ingestion=149 mg/kg; RAO9 Riverbank Soil and Sediment= 149 mg/kg)
        ii. Below DEQ HH RBC Residential 3,100 mg/kg; and below most DEQ terrestrial Ecological Criteria. It exceeds the DEQ Level II Eco risk screening value for invertebrates (Oak Ridge number for earthworms) of 50 mg/kg by a factor of 2. Because of this material’s lack of organics, limited placement between the geofabric and the rock armor, where volumes are limited and the exposure potential for earthworms is unlikely (3 feet below final grade except for the limited area under the dock where it will be 1.5 feet below grade).

2. <u>Beach backfill</u> (to backfill in beach removal areas)
    a. Meets design import criteria
    b. As indicated on the attached table, the original arsenic concentration was reported by the laboratory to be 59 mg/kg and has not been confirmed by additional testing. The import criteria for arsenic is the DEQ background for the Portland Basin, 8.8 mg/kg. The 59 mg/kg arsenic result was considered anomalous as this is native, unimpacted material and the laboratory was asked to run an additional aliquot from the same sample. The second aliquot result was 4.45 mg/kg. Based on this result, the supplier collect three 5-point composites to get a better handle on the arsenic concentrations (and they also analyzed a composite sample of the composites). The arsenic concentrations in the composite samples were 4.29, 4.43 and 4.46 mg/kg and the arsenic concentration in the composite of composites was 3.91 mg/kg. After discussions with DEQ and based on these results, arsenic concentrations meet the background-based criteria and the import material is considered acceptable.

3. <u>Berm backfill</u> (to be used subgrade in berm removal areas, within soil wraps and located below 1-foot of topsoil)
    a. Meets design import criteria except low level dioxins and furans (D/F) concentrations (2,3,7,8-Tetra CDD at 0.726 pg/g; 2,3,7,8-Tetra CDF at 6.81/7.2 pg/g).
    b. We are considering two options for the berm backfill as follows:
        i. Use of the Berm Backfill material as is, with an additional composite sample to confirm D/F concentrations. Per discussions with DEQ, the supplier may choose to run a 5-point composite for D/F. Should the results confirm these concentrations (or be lower than these concentrations), then this material will be considered acceptable for the berm backfill.
        ii. Using the 1.5”minus material in the berm in lieu of the original specified material provided the landscape designer finds it acceptable and copper concentrations are confirmed.
            1. Riverbank designers have determined that it is suitable from a geotechnical perspective: The original material specified for the berm backfill was a well-graded 4 inch minus aggregate. In general, the originally specified berm backfill and the 1.5” minus are both mixtures of sand and gravel. The berm backfill specification allows for a higher percentage of sand and it allows larger gravel when compared to the crushed rock. To dig into the details, the berm backfill specification has a relatively even distribution of gravel and sand size particles (it allows more sand than gravel) and allows up to 7% of silt size particles. The 1.5” minus crushed rock is gravel and sand size aggregate with

more gravel than sand. The allowable maximum gravel size in the 1.5-inch minus is smaller than the berm backfill specification allows. The crushed rock specification requires between 25 and 40 percent sand with the rest being gravel smaller than 1.5 inches. Both materials will work from a strength perspective for embankment stability.

2. It meets import criteria except copper which is undergoing additional testing and will likely be considered acceptable as it meets likely risk-based values for copper being considered for Portland Harbor and will be located beneath 1 foot of topsoil and within soil wraps and will comprise only a portion of the overall berm..
3. We are verifying with the landscape designers to make sure that the crushed rock is compatible with the landscaping requirements for the berm.

We will keep you posted on:

- The results of additional copper testing of the 1.5" minus rock
- The input of the landscape designer with regard to suitability of the 1.5" minus rock for berm backfill
- The decision whether to test a composite sample of the berm backfill or use the 1.5" minus rock for the berm backfill.

Please let us know if you have any questions. Thanks

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